

**Amendments to the Claims:**

The following is a complete list of claims indicating the changes incorporated by the present amendment and replacing all prior versions of the claims. Any claims canceled herein and all deletions made in claims that are not canceled herein are done so without prejudice to being re-instituted at a later date in this or a related application.

**Listing of Claims:**

- 1                   **1. (Currently Amended):** A lyophilized bead suitable for use in the  
2   amplification of a nucleic acid sequence, said lyophilized bead **being substantially spherical in**  
3   **shape and** comprising:  
4                   a thermally stable enzyme; and  
5                   mannitol;  
6   wherein said lyophilized bead has a weight percentage of said mannitol of between about 53%  
7   and about 75% (w/w).
- 1                   **2. (original):** The lyophilized bead of claim 1, wherein said amplification occurs  
2   in a reaction mixture comprising a volume of between about 5  $\mu$ L and about 200  $\mu$ L.
- 1                   **3. (original):** The lyophilized bead of claim 1, further comprising a nucleoside  
2   triphosphate or a derivative thereof.
- 1                   **4. (original):** The lyophilized bead of claim 1, wherein said lyophilized bead has  
2   an average cross-section of between about 1 millimeter and about 4.5 millimeters.
- 1                   **5. (original):** The lyophilized bead of claim 1, wherein said weight percentage is  
2   between about 62% and about 75% (w/w).
- 1                   **6. (original):** The lyophilized bead of claim 5, wherein said weight percentage is  
2   between about 68% and about 75% (w/w).

1                   **7. (original):** The lyophilized bead of claim 1, wherein said thermally stable  
2 enzyme is selected from the group consisting of polymerase, ligase, and combinations thereof.

1                   **8. (previously presented):** The lyophilized bead of claim 1, further comprising a  
2 component selected from the group consisting of an antibody that inactivates a polymerase and a  
3 wax or oil to sequester magnesium.

1                   **9. (Currently Amended):** The lyophilized bead of claim 1, further comprising  
2 **HEPES N-(2-Hydroxyethyl)piperazine-N'-(2-ethanesulfonic acid) (HEPES).**

1                   **10. (original):** The lyophilized bead of claim 1, further comprising a probe.

1                   **11. (withdrawn):** The lyophilized bead of claim 1, further comprising a reverse  
2 transcriptase.

1                   **12. (original):** The lyophilized bead of claim 1, further comprising an internal  
2 control.

1                   **13. (withdrawn):** A lyophilized bead suitable for use in the amplification of a  
2 nucleic acid sequence, said lyophilized bead comprising:

3                   a forward polynucleotide primer;

4                   a reverse polynucleotide primer; and

5                   mannitol;

6 wherein said lyophilized bead has a weight percentage of said mannitol of between about 53%  
7 and about 75% (w/w).

1                   **14. (withdrawn):** The lyophilized bead of claim 13, wherein said amplification  
2 occurs in a reaction mixture comprising a volume of between about 5  $\mu$ L and about 200  $\mu$ L.

1                   **15. (withdrawn):** The lyophilized bead of claim 13, wherein said lyophilized  
2 bead has an average cross-section of between about 1 millimeter and about 4.5 millimeters.

1                   **16. (withdrawn):** The lyophilized bead of claim 13, wherein said weight  
2 percentage is between about 62% and about 75% (w/w).

1                   **17. (withdrawn):** The lyophilized bead of claim 16, wherein said weight  
2 percentage is between about 68% and about 75% (w/w).

1                   **18. (withdrawn):** The lyophilized bead of claim 13, further comprising HEPES.

1                   **19. (withdrawn):** The lyophilized bead of claim 13, further comprising a probe.

1                   **20. (withdrawn):** The lyophilized bead of claim 13, further comprising an  
2 internal control.

1                   **21. (withdrawn):** The lyophilized bead of claim 13, wherein said nucleic acid  
2 sequence is selected from the group consisting of bacterial, fungal, and viral nucleic acid  
3 sequences.

1                   **22. (withdrawn):** The lyophilized bead of claim 21, wherein said bacterial  
2 nucleic acid sequence is derived from a member selected from the group consisting of *Bacillus*  
3 *Anthraxis*, *Yersinia pestis*, *Clostridium botulinum*, *Francisella tularensis*, Group B  
4 *Streptococcus*, *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and *Xylella fastidiosa*.

1                   **23. (withdrawn):** The lyophilized bead of claim 21, wherein said viral nucleic  
2 acid sequence is derived from a member selected from the group consisting of Vaccinia, West  
3 Nile Fever virus, Equine Encephalitis virus, and Foot and Mouth Disease virus.

1                   **24. (withdrawn):** A method for the amplification of a nucleic acid sequence, said  
2 method comprising:

3                   (a) dissolving a lyophilized bead in a liquid, wherein said lyophilized bead  
4 comprises:

5                   a thermally stable enzyme; and  
6                   mannitol;

7 wherein said lyophilized bead has a weight percentage of said mannitol of  
8 between about 53% and about 75% (w/w), thus forming a reaction mixture;  
9 and  
10 (b) subjecting said reaction mixture to an amplification reaction.

1 **25. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a volume of between about 5  $\mu$ L and about 200  $\mu$ L.

1 **26. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a nucleoside triphosphate or a derivative thereof.

1 **27. (withdrawn):** The method of claim 24, wherein said thermally stable enzyme  
2 is selected from the group consisting of polymerase, ligase, and combinations thereof.

1 **28. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a forward polynucleotide primer.

1 **29. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a reverse polynucleotide primer.

1 **30. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a probe.

1 **31. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises a nucleic acid comprising said nucleic acid sequence.

1 **32. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises HEPES.

1 **33. (withdrawn):** The method of claim 24, wherein said reaction mixture further  
2 comprises an internal control.

1                   **34. (withdrawn):** The method of claim **24**, wherein said reaction mixture further  
2 comprises a hot start methodology.

1                   **35. (withdrawn):** The method of claim **24**, wherein said lyophilized bead has an  
2 average cross-section of between about 1 millimeter and about 4.5 millimeters.

1                   **36. (withdrawn):** A method for the amplification of a nucleic acid sequence, said  
2 method comprising:

3                   (a) dissolving a lyophilized bead in a liquid, wherein said lyophilized bead  
4 comprises:

5                         a forward polynucleotide primer;  
6                         a reverse polynucleotide primer; and  
7                         mannitol; and

8                   wherein said lyophilized bead has a weight percentage of said mannitol of  
9                         between about 53% and about 75% (w/w), thus forming a reaction mixture;  
10                   and

11                         (b) subjecting said reaction mixture to an amplification reaction.

1                   **37. (withdrawn):** The method of claim **36**, wherein said reaction mixture further  
2 comprises a volume of between about 5  $\mu$ L and about 200  $\mu$ L.

1                   **38. (withdrawn):** The method of claim **36**, wherein said reaction mixture further  
2 comprises a nucleoside triphosphate or a derivative thereof.

1                   **39. (withdrawn):** The method of claim **36**, wherein said reaction mixture further  
2 comprises a probe.

1                   **40. (withdrawn):** The method of claim **36**, wherein said reaction mixture further  
2 comprises a nucleic acid comprising said nucleic acid sequence.

1                   **41. (withdrawn):** The method of claim 36, wherein said reaction mixture further  
2 comprises HEPES.

1                   **42. (withdrawn):** The method of claim 36, wherein said reaction mixture further  
2 comprises a thermally stable enzyme.

1                   **43. (withdrawn):** The method of claim 36, wherein said reaction mixture further  
2 comprises an internal control.

1                   **44. (withdrawn):** The method of claim 36, wherein said lyophilized bead has an  
2 average cross-section of between about 1 millimeter and about 4.5 millimeters.

1                   **45. (Currently Amended):** A lyophilized bead suitable for use in the  
2 amplification of a nucleic acid sequence, said lyophilized bead being substantially spherical  
3 and prepared by a process comprising:

4                   (a) creating an aqueous solution, said aqueous solution comprising:

5                   a thermally stable enzyme; and

6                   mannitol;

7                   wherein said solution has a concentration of said mannitol between about  
8 0.38 M (moles of mannitol/liter of solution) and about 0.99 M (moles of  
9 mannitol/liter of solution);

10                  (b) quick-freezing the product of (a); and

11                  (c) freeze-drying the product of (b).

1                   **46. (original):** The lyophilized bead of claim 45, wherein the product of (c) has  
2 an average cross-section of between about 1 millimeter and about 4.5 millimeters.

1                   **47. (original):** The lyophilized bead of claim 45, wherein the product of (c)  
2 further comprises a nucleoside triphosphate or a derivative thereof.

1                   **48. (original):** The lyophilized bead of claim 45, wherein said thermally stable  
2 enzyme is selected from the group consisting of polymerase, ligase, and combinations thereof.

1                   **49. (withdrawn):** The lyophilized bead of claim 45, wherein the product of (c)  
2 further comprises a reverse transcriptase.

1                   **50. (previously presented):** The lyophilized bead of claim 45, wherein the  
2 product of (c) further comprises a component selected from the group consisting of an antibody  
3 that inactivates a polymerase and a wax or oil to sequester magnesium.

1                   **51. (Currently Amended):** The lyophilized bead of claim 45, wherein the  
2 product of (c) further comprises **HEPES N-(2-Hydroxyethyl)piperazine-N'-(2-ethanesulfonic**  
3 **acid) (HEPES).**

1                   **52. (original):** The lyophilized bead of claim 45, wherein the product of (c)  
2 further comprises a probe.

1                   **53. (original):** The lyophilized bead of claim 45, wherein the product of (c)  
2 further comprises an internal control.

1                   **54. (withdrawn):** A lyophilized bead suitable for use in the amplification of a  
2 nucleic acid sequence, prepared by a process comprising:

3                   (a) creating an aqueous solution, said aqueous solution comprising:

4                               a forward polynucleotide primer;

5                               a reverse polynucleotide primer; and

6                               mannitol;

7                   wherein said solution has a concentration of said mannitol between about  
8 0.38 M (moles of mannitol/liter of solution) and about 0.99 M (moles of  
9 mannitol/liter of solution);

10                   (b) quick-freezing the product of (a); and

11                   (c) freeze-drying the product of (b).

1                   **55. (withdrawn):** The lyophilized bead of claim 54, wherein the product of (c)  
2 has an average cross-section of between about 1 millimeter and about 4.5 millimeters.

1                   **56. (withdrawn):** The lyophilized bead of claim 54, wherein the product of (c)  
2 further comprises a nucleoside triphosphate or a derivative thereof.

1                   **57. (withdrawn):** The lyophilized bead of claim 54, wherein the product of (c)  
2 further comprises HEPES.

1                   **58. (withdrawn):** The lyophilized bead of claim 54, wherein the product of (c)  
2 further comprises a probe.

1                   **59. (withdrawn):** The lyophilized bead of claim 54, wherein the product of (c)  
2 further comprises an internal control.

1                   **60. (withdrawn):** A lyophilized bead suitable for use in microanalytic systems  
2 comprising:

3                               a moisture-sensitive reactant; and

4                               mannitol;

5                   wherein said lyophilized bead has a weight percentage of said mannitol of

6                               between about 53% and about 75% (w/w); and

7                   wherein said lyophilized bead has an average cross-section of between about 1  
8 millimeter and about 4.5 millimeters.

1                   **61. (withdrawn):** The lyophilized bead of claim 60, wherein said weight  
2 percentage is between about 62% and about 75% (w/w).

1                   **62. (withdrawn):** The lyophilized bead of claim 60, wherein said weight  
2 percentage is between about 68% and about 75% (w/w).



1                   **63. (New):** A lyophilized bead suitable for use in the amplification of a nucleic  
2 acid sequence, said lyophilized bead comprising:  
3                   a thermally stable enzyme; and  
4                   mannitol;  
5                   wherein said lyophilized bead has a weight percentage of said mannitol of  
6 between about 53% and about 75% (w/w).

1                   **64. (New):** A lyophilized bead suitable for use in the amplification of a nucleic  
2 acid sequence, prepared by a process comprising:  
3                   (a) creating an aqueous solution, said aqueous solution comprising:  
4                   a thermally stable enzyme; and  
5                   mannitol;  
6                   wherein said solution has a concentration of said mannitol between about  
7 0.38 M (moles of mannitol/liter of solution) and about 0.99 M (moles of  
8 mannitol/liter of solution);  
9                   (b) quick-freezing the product of (a); and  
10                  (c) freeze-drying the product of (b).